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L21: Entry 4 of 17

File: USPT

Dec 10, 2002

US-PAT-NO: 6491955

DOCUMENT-IDENTIFIER: US 6491955 B1

TITLE: .beta.-D-galactosidase microencapsulated with fatty acid ester and milk containing the same

DATE-ISSUED: December 10, 2002

INVENTOR-INFORMATION:

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ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
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APPL-NO: 09/ 564994 [PALM]

DATE FILED: May 4, 2000

PARENT-CASE:

This application is a continuation of U.S. patent application Ser. No. 09/122,119 filed Jul. 24, 1998, now abandoned.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
KR	98-5802	February 24, 1998

INT-CL: [07] A23 C 9/12

US-CL-ISSUED: 426/61, 426/34, 426/89, 426/99, 426/580, 426/585

US-CL-CURRENT: 426/61, 426/34, 426/580, 426/585, 426/89, 426/99

FIELD-OF-SEARCH: 426/61, 426/580, 426/585, 426/34, 426/48, 426/64, 426/89, 426/98, 426/99

PRIOR-ART-DISCLOSED:

U. S. PATENT DOCUMENTS

 Search Selected Search ALL

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5064669</u>	November 1991	Tan et al.	426/307
<u>5391371</u>	February 1995	Jacobson et al.	424/94.2
<u>5902617</u>	May 1999	Pabst	426/61
<u>6402997</u>	June 2002	Kwak et al.	

OTHER PUBLICATIONS

Rao et al., AN 436073 FROSTI, abstracting Food Science and Technology International, 1997, Apr. 3(2), 81-86, Apr., 1997.

Rao et al., AN 381960 FROSTI, abstracting Journal of Food Biochemistry, 1995 18(4), 239-252, 1995.

Chawan et al. AN 327212 FROSTI, abstracting Journal of Food Biochemistry, 1993, 16(6), 349-357, 1993.

C.B, Chawan P.K. Penmetsa, R. Veeramachaneni, D.R. Rao, "Liposomal Encapsulation of B-Galactosidase: Effect of Buffer Molarity, Lipid Composition and Stability in Milk," Journal of Food Biochemistry 16 (1993) 349-357.

D.R. Rao, C.B. Chawan, R. Veeramachaneni, "Liposomal Encapsulation of B-Galactosidase: Comparison of Two Methods of Encapsulation and In Vitro Lactose Digestibility," Journal of Food Biochemistry 18 (1995) 239-251.

ART-UNIT: 1761

PRIMARY-EXAMINER: Wong; Leslie

ATTY-AGENT-FIRM: Mathews, Collins, Shepherd & McKay, P.A.

ABSTRACT:

A .beta.-D-galactosidase which is encapsulated with fatty acid ester, does not exert its hydrolysis function in milk but hydrolyze lactose in the human body. Hence, the milk containing the encapsulated .beta.-D-galactosidase, does not change in sweetness with storage and is digestible to the .beta.-D-galactosidase-deficient people. In addition, the milk can maintain its characteristic taste without off-flavor by virtue of the excellent feature of fatty acid ester.

6 Claims, 0 Drawing figures

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Brief Summary Text (9):

In 1990s, a further advanced milk product was developed. The milk was free of lactose because it was removed through ultra filtration (UF). However, removal of lactose is accompanied by a great loss of an important nutrient as well as of milk's characteristic flavor. Also, this technique has a significant disadvantage of decreasing the product yield by 5%. In addition, the UF apparatus is very expensive and continuously needs supplies, such as filters, cleansing agent, etc, giving rise to a significant increase of cost.

Brief Summary Text (10):

An advanced technique is disclosed in Korean Pat. Nos. 088464 and 088465. According to the patents, butter is melted at 40.degree. C. for 6 hours, dispersed at 50.degree. C. by use of the supernatant fat, emulsified with the aid of an emulsifying agent, and sprayed under a high pressure into low-fat milk (fat content 1% or less) at 5-10.degree. C. to coat lactose. As a result, capsules 5-20 .mu.m in diameter are produced at a yield of about 85%. For its preparation, the emulsion requires a long time and a high temperature (50.degree. C.), which may be factors to cause degradation in the production yield and in the quality of the fat, respectively. Further, since fat is used as the coating agent, low-fat milk is needed, requiring a cream separation process. In addition, the emulsifying agent used generally smells bad, giving unpleasant flavor to the milk. Furthermore, the capsules are too large in diameter and so rise to the surface of milk after storage for 2-5 hours.

Current US Original Classification (1):

426/61

Current US Cross Reference Classification (1):

426/34

Current US Cross Reference Classification (2):

426/580

Current US Cross Reference Classification (3):

426/585

Current US Cross Reference Classification (4):

426/89

Current US Cross Reference Classification (5):

426/99